

advised and educated on the use of CPAS for access to GETS so that they are aware of the differences between cellular and wireline access to GETS.

The CPAS Subgroup also discussed roaming arrangements for CPAS subscribers. To accommodate roaming there must be an ability for both visited and home cellular systems to exchange information about a subscriber's authorization and priority level to use the feature. The TIA/EIA IS-41 standard, *Intersystem Operation*, defines the protocol that governs information exchange between home and visited systems, but it contains no language on CPAS in its present revision. The IS-41-C standard, which is being written, will describe how home and visited systems should exchange information to permit CPAS transportability. Implementation of IS-41-C is not expected, however, until 1997 or 1998. Until that time, automatic access to the CPAS feature in visited systems is not feasible.

2.3.7 Other CPAS Feature Characteristics. The CPAS Subgroup considered accommodating users who were not regular subscribers of cellular service and concluded that to ensure the success of the priority access feature, NS/EP users must be motivated to become subscribers of cellular phone services prior to the occurrence of a disaster. Accommodating an ad hoc plan to provide CPAS to rented or borrowed phones would be a disincentive for potential users who preregister for CPAS and could result in chaos in the early stages of a disaster. However, the subgroup recognizes that there will always be emergency situations in which key NS/EP users must be immediately afforded cellular priority access services. These users would need to independently negotiate CPAS implementation with their carriers on an expedited basis after having secured CPAS authorization.

The CPAS Subgroup also considered the possibility of supporting per-line invocation for CPAS users rather than a call-by-call method. The subgroup agreed that CPAS was intended to ensure the availability of voice channels for both NS/EP and public users. The subgroup also agreed that priority access should be invoked on an as-needed basis. Therefore, the CPAS Subgroup endorsed the Government's requirement for call-by-call invocation.

2.4 Description of Typical Cellular Priority Access Call. This section describes how a CPAS call would be established in an advanced mobile phone service (AMPS) system. AMPS, which is the most widely deployed cellular technology in the United States, supports

more than 19 million analog mobile terminals. A call setup description for time division multiple access or code division multiple access digital networks would be similar.

2.4.1 AMPS Operation. Under normal circumstances, calls are initiated on an AMPS mobile telephone by entering the desired destination number into a register on the mobile unit and pressing the "send" button. The mobile station detects the cell site emanating the strongest signal and sends a request for service with the called telephone number over the control channel. The cell site receives the request and the mobile subscriber's identification, including the mobile identification number (MIN) and electronic serial number (ESN), on its control channel. The cell site relays this information to the MSC via a high-speed data link and, in the case of a sectored cell site with directional antennas, selects the antenna with the strongest signal.

The MSC verifies that the subscriber has a valid ESN/MIN combination and designates, through the cell site, the strongest nonbusy radio channel for the call. The MSC then waits for channel assignment verification from the mobile station over the control channel. Once received, the MSC connects the call to the PSN or to another mobile terminal. If the call is destined for another mobile station, the MSC first determines whether the called party is free to receive the call. If the called party is free, the MSC sends a page to all cell site controllers with the mobile station's MIN. Each cell site controller broadcasts a paging message on the control channel to the entire service area. The called unit recognizes and responds to its page through the closest cell site. The MSC then assigns the called and calling parties free channels in their cells and instructs the units to tune into their respective user channels.

2.4.2 CPAS Call Handling Procedures. This section describes how the operation of the PACA feature. Each valid invocation attempt is slotted into a particular priority level depending upon the subscriber's service profile. The PACA feature should only be invoked when it is requested *and* an idle voice or traffic channel required for an origination request is not available. The invocation request is made by prepending the PACA feature code to the origination request, as in:

***FC + # + Termination Request + SEND**

Call attempts that invoke the PACA feature are treated by the cellular system as follows:

- Higher priority calls are queued ahead of lower priority calls regardless of when they arrived.
- Call requests of the same priority level are queued in the order of arrival.
- New requests may displace older requests if the new request:
 - Arrives when the queue is full, and
 - Has higher priority than other requests.

A priority call request may be removed from the queue in two ways. The first is manually by the subscriber pressing the end key. The second is automatically by the system if radio contact with the requesting mobile station is not maintained. A subscriber may move between the cells of a system while a PACA request is pending and not lose his or her place in the queue to requests of the same priority level received later or a lower priority level.

When a voice or traffic channel for the request becomes available, the oldest and highest priority call request is served first. If a subscriber moves to a cell with a channel available in the same system, the request is served immediately. When a voice channel becomes available the mobile station is alerted of the availability of a channel through the use of an automatic recall distinctive alerting cadence:

When the subscriber answers the distinctive alerting cadence, the originating call is allowed to proceed. If the recall is not answered within a specified period of time, the request is denied and removed from the queue. If a customer tries to invoke CPAS, but has not been authorized, reorder tone will be applied after the call is sent.

When a subscriber invokes PACA concurrent while he or she already has a call in queue, the previous request is removed from the queue, and the new origination request queued as if it were a new request. If a subscriber has a call in queue, and then dials another

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number without invoking PACA, his or her previous PACA invocation is removed from the queue and the new origination request is denied if no channels are available.

**CELLULAR PRIORITY ACCESS SERVICES SUBGROUP
WORKING DOCUMENT
SECTION THREE**

SERVICE ADMINISTRATION

3.0 Service Administration Overview. The CPAS Subgroup determined that the primary goal of CPAS should be to support authorized users with NS/EP and disaster recovery responsibilities. Meeting this objective would require a structured management and administration system to ensure that priority assignments were only issued to authorized users. The subgroup addressed a number of key administrative issues, such as: centralized or decentralized management, who might administer a cellular priority access system, who would provide oversight, what criteria should be used to assign priority access, what specific operational procedures would be required, and which legal and regulatory framework is appropriate for the service. These issues are discussed and recommendations are presented below.

3.1 Centralized Versus Decentralized Administration. At the request of State participants, the CPAS Subgroup considered a decentralized administrative approach in which individual State governments would assign CPAS authority under a strict set of national guidelines. This approach would ensure State control over the number of users who were assigned priority access within their boundaries and what levels were assigned. During a disaster, however, it would be difficult for a State to determine exactly how many federal NS/EP users would travel to the area. In addition, a decentralized approach would not ensure nationwide uniformity with regard to the categories of users that would receive priority authorization and how that priority would be assigned. States would differ in terms of their available resources and their commitment to emergency response communications programs. Also, with a decentralized system, the cellular industry might have to accommodate a different administrative system in each State or jurisdiction, which could lead to increased industry implementation costs, potentially cumbersome procedures, and delays in startup.

The CPAS Subgroup concluded that it would be desirable to centralize priority access administration within one federal government office. Centralized administration would ensure uniform and consistent application of rules, procedures, and qualifications and would provide a single point of contact for information and problem resolution. Users would not face a variety

of procedures and qualification criteria based on geographic location and localized CPAS procedures. Centralized administration would also simplify priority access procedures for cellular service providers who offer service in multiple geographic areas.

The CPAS Subgroup agreed that the Federal Government, specifically the OMNCS, would be a logical choice to administer CPAS because it already supported the NS/EP telecommunications requirements of the 23 federal agencies and had experience in administering telecommunications priorities through the Telecommunications Service Priority (TSP) System. The subgroup also agreed that the OMNCS should confirm its acceptance of the responsibility to manage and administer CPAS services. Funding and staffing resources to fulfill this commitment could be made when estimates of CPAS users were available and administrative procedures are finalized.

3.2 Management Oversight. The CPAS Subgroup's considered whether CPAS and TSP could share management functions, or if an entirely new system would be needed. Although TSP applies to wireline services, it was initially designed to include cellular services when cellular providers were capable of identifying and providing priority provisioning and restoration of wireless services. The TSP System construct has a number of attributes that could apply to CPAS and eliminate the need to duplicate existing capabilities. For example, the TSP regulatory and oversight structure could apply to CPAS with minor adjustments. The TSP Management Information System could be adapted to store CPAS information and save the expense and effort of designing a completely new system. Furthermore, CPAS administrative duties would be a natural extension of existing TSP Program Office (PO) staff responsibilities and would require minimal additional training. Additional staff, however, might be required, and operational procedures would need to be modified to apply to wireless technologies and call-by-call priority treatment.

Although the CPAS Subgroup focused its deliberations on the administrative and managerial structure of the TSP System, the subgroup acknowledged that lessons learned from other existing programs should be considered when establishing the CPAS administrative structure. In particular, the Federal Government should investigate GETS processes and procedures to determine whether some attributes of that program could be modified to support CPAS.

3.2.1 Assignment Criteria. CPAS is envisioned to support real-time communication needs for command and control functions of first response personnel and continuing management of ongoing domestic emergencies. CPAS would facilitate communication for those immediate response emergency managers in the crucial first hours following an emergency, before additional cellular network capacity could be added, new wireline services provisioned, or existing services restored. First responders are typically State and local government personnel, and the CPAS criteria should favor first responder leadership by qualifying them for one of the highest priority levels.

The current criteria used by the TSP PO to assign wireline priorities could not effectively support CPAS without modifications. The existing TSP criteria are divided into five categories and were designed primarily to apply to wireline services supporting NS/EP functions. The criteria's emphasis is clearly on reserving the highest priority categories for users with critical national security missions. Functions within each category qualify for a variety of priority levels, and physical attributes of the service are evaluated to determine the specific priority level. These priorities are assigned for wireline restoration and provisioning services, which are fundamentally different from CPAS' call-by-call priority.

The CPAS Subgroup suggested that new criteria be developed to meet the requirements of CPAS users. Those new criteria might be similar in structure to TSP, that is, five levels of priority that would be assigned according to the user's function, mission, and needs. The initial development of those criteria has been completed with input from a variety of users and service providers. This criteria should be distributed to a variety of State and local organizations and federal agencies for their review.

3.3 Operational Procedures. The CPAS Subgroup determined that current TSP operational procedures could be streamlined to support CPAS. Members reviewed a variety of topics with the intention of consolidating or eliminating steps wherever appropriate. Those topics are addressed in the following sections.

3.3.1 Authorizing Agent Requirements. The subgroup determined that it would be desirable to establish an entity in each State to review CPAS requests before they reach the

CPAS administrative office. To meet this requirement, the CPAS Subgroup proposed the establishment of authorizing agents to provide central points of contact to receive priority requests from a specific geographic area or a specific category/community of NS/EP users with which the authorizing agent is familiar. An authorizing agent could be a State government entity or a federal government agency. The CPAS Subgroup proposed that all NS/EP users (Federal and non-Federal) requesting CPAS priorities forward their requests through an authorizing agent to the CPAS administrative office. If a CPAS user was not satisfied with the priority level recommended by the authorizing agent or assigned by the CPAS administrative office, the user would have the opportunity to appeal the decision.⁵

3.3.2 Authorization Request Process. The authorization request process proposed by the subgroup is similar to the current TSP System, in which a national administrative office would authorize individual requests for service. One difference, however, is that the user would contact a service provider and have the wireless telephone service activated and a phone number assigned before contacting the CPAS administrative office. The CPAS administrative office would evaluate the request against its criteria before assigning a priority level. The specifics of how the request and response would be structured and transmitted to users and service providers are now "work in progress." Users would be required to identify the cellular provider on the official CPAS request.

It would be desirable to receive and transmit CPAS requests, assignments, and reports electronically. The TSP Document Management System (DMS) allows users to electronically request assignments, maintain records of assignments and service information, and complete TSP reporting requirements. The TSP PO developed and distributed the DMS to users free of charge. The TSP DMS could easily be modified to accommodate CPAS and be distributed to CPAS users to streamline the request process. The CPAS administrative office could also accept facsimile and phone requests (with paperwork to follow). Current TSP rules require the TSP PO to respond to assignment requests within 30 days, although the requests are processed and returned within 48 hours of receipt. A CPAS request would be subject to the same timeframes, but most requests would be answered within 48 to 72 hours.

⁵ A TSP assignment has never been appealed.

Contrary to the current TSP System, which distinguishes between provisioning of new services and restoration of existing services, the CPAS feature would always be available for qualified users to invoke as necessary. The CPAS Subgroup strongly recommends that users preregister for CPAS. Subgroup members envisioned that users would request the priority when applying for service during a nonemergency time so that there would be no delay in receiving the priority when they needed to invoke the service in response to an emergency. Additionally, State and federal regional emergency response managers could preregister phones that could be distributed on an as-needed basis during emergency situations. The CPAS Subgroup urges the Government to discourage the practice of potential users waiting for a disaster to occur before requesting a cellular priority access assignment. It is not clear how quickly CPAS could be activated for an individual user during an emergency when other higher priority activities might take precedence. The CPAS administrative office and the telecommunications industry will, as usual, respond as soon as possible to emergency requests for CPAS during a disaster situation from command authorities.

The CPAS Subgroup agreed that it would be important to develop a procedure that would generate a unique authorization code containing the priority assignment and identifying each individual user/mobile station. The specifics of how the CPAS administrative office would convey the priority assignment to the user/authorizing agent/cellular provider are now being worked.

3.3.3 Information Reports. The CPAS Subgroup recommends that the CPAS administrative office maintain a database of priority assignments and users. Priority assignments should have a defined expiration date, for instance, 18 to 24 months from assignment, at which time the user would be required to reapply or in some way confirm that the priority assignment was still valid.

3.3.4 User Documentation. Successful CPAS implementation will require users and service providers to agree on capabilities, administration, authorization, and use. The OMNCS is developing an outreach program that would open a national discourse on CPAS and include a needs analysis, a service definition, an administrative and regulatory plan, and an implementation roadmap. The intention of this effort is to ensure that the CPAS capability will truly meet the needs of the Nation and it is supported at the grass roots. Existing TSP user and

service provider documentation is being evaluated, and either the material will be modified or new documentation will be developed to reflect CPAS procedures. A CPAS operational guide is planned, along with general informational material such as brochures and perhaps a video to supplement educational outreach programs. The FCC will likely have to review the criteria and procedural guidelines. In addition, service providers may require State and local information to be developed for their customers. The CPAS administrative office could assist in developing template material to be modified by service providers as necessary.

3.4 Regulatory Strategy and Legal Framework. The CPAS Subgroup considered numerous proposals and suggestions regarding the development of a legal and regulatory framework to facilitate CPAS implementation. The subgroup agreed that nationwide CPAS was in the public's interest and the FCC should facilitate its deployment.

The OMNCS determined that portions of the CPAS administrative procedures differed significantly from TSP; and, therefore, a separate FCC rulemaking to establish CPAS rules would be required. Although FCC would need to confirm that CPAS would not violate the Communications Act of 1934 as amended, the TSP System sets a precedent for priority treatment in the public switched network and for FCC oversight of CPAS. The OMNCS legal counsel has prepared a Petition for Rulemaking, and the CPAS Subgroup is working with the OMNCS to develop administrative rules to include as part of that petition. The OMNCS plans to circulate the draft rules to a wide audience of CPAS Subgroup members and other State and federal entities to obtain input and gain acceptance of CPAS operational concepts before officially filing the petition with the FCC late in 1995. Due to the extensive outreach program the OMNCS plans to conduct, comments on the petition should be supportive, and an FCC ruling is expected within 12 months of filing.

Operational oversight could be provided by the TSP Oversight Committee, a Federal Advisory Committee made up of representatives from federal and State government and telecommunications companies that have a significant interest in the TSP System. The Oversight Committee provides the means for a periodic review of the TSP System to ensure that it remains current with technology and its policies and procedures continue to be effective. This forum has been effective in its systemic reviews, in part due to its equal representation of users and service providers. CPAS will likely need a similar oversight body to ensure that the

service continued to work as originally designed and continued to meet the needs of its user body.

The TSP Oversight Committee charter could be modified to include cellular priority access, and corresponding changes in the membership structure could be proposed to include cellular service providers and users. The number of federal advisory committees is being closely controlled in the current administration by the General Services Administration (GSA), which ultimately approves their charters. Each federal advisory committee must be rejustified every 2 years to ensure that it continues to serve a unique mission that could not be performed by another committee. It may be easier to obtain GSA's support by expanding the mission of the TSP Oversight Committee, rather than by trying to establish a new committee to serve a similar mission.

During the course of the CPAS Subgroup's deliberations, the FCC issued a Notice of Proposed Rulemaking (Docket #94-102) on October 19, 1994, for the purposes of adopting rules that would require wireless service providers to offer enhanced 9-1-1 services to all users. That proceeding presented CPAS stakeholders with an opportunity to participate actively in the FCC's comment process and to raise the commission's awareness of CPAS. The majority of the commentors in that proceeding did not support the concept of giving cellular 9-1-1 calls from the public priority over all other calls; therefore, the commission does not have a strong record to support ruling in favor of this notion. The subgroup and the OMNCS will continue to monitor this proceeding.

The CPAS Subgroup also discussed several State and local legislative initiatives that could independently mandate implementation of CPAS in support of local emergency response activities.⁶ Based on comments provided by several States, the subgroup concluded that decisive action by the OMNCS would likely convince State and local governments to delay implementation of their own versions of CPAS while a national implementation strategy was

⁶ Legislation has been proposed in Oregon and California. On December 30, 1994, the Oregon State Police Department filed a Certificate with the Oregon Attorney General, establishing temporary rules regarding the provision of cellular priority access services.

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being developed. The CPAS Subgroup recommends that the OMNCS take immediate and decisive action to demonstrate its commitment to implementing nationwide CPAS.

**CELLULAR PRIORITY ACCESS SERVICES SUBGROUP
WORKING DOCUMENT
SECTION FOUR**

PROJECT MANAGEMENT

4.0 Project Management Overview. This section discusses various managerial issues that must be addressed by the Federal Government and the cellular telecommunications industry to successfully accomplish the implementation of a nationwide cellular priority access capability.

4.1 Government Oversight. The CPAS Subgroup suggests that the Federal Government actively coordinate with State and local governments and industry groups to gain support for nationwide CPAS implementation. During the course of its deliberations, the subgroup received valuable contributions from a broad range of stakeholders pertaining to the issue of federal project coordination. As a result of these discussions, the CPAS Subgroup agreed that the OMNCS was the appropriate organization to coordinate CPAS deployment because of that office's unique ability to draw upon the support of 23 federal agencies and its experience in coordinating telecommunication issues with State governments.

The OMNCS and CPAS Subgroup should continue to address technical and administrative issues. In addition, they should both work closely with State and local governments and with cellular service providers to ensure a comprehensive understanding of CPAS implementation and administrative issues.

4.2 Government and Industry Cooperation. The CPAS Subgroup concluded that CPAS implementation efforts would benefit greatly from continued joint Government and industry cooperation. Therefore, it is recommended that the OMNCS continue to seek the advice of the NSTAC to facilitate CPAS deployment.

4.3 Project Administration. The development and implementation of CPAS administrative procedures is an important task that the Government is addressing. The OMNCS should continue to identify synergies between TSP and CPAS administrative requirements, particularly concerning managerial and regulatory structures.

4.4 Regulatory Strategy and Legal Framework. The OMNCS should continue its efforts to establish FCC rules to govern CPAS, mindful of the need to involve stakeholders early in the process and demonstrate to State and local governments that a nationwide service will meet their needs.

4.5 Standards Development and Industry Implementation. The OMNCS should work with industry groups and the NSTAC to expedite modifications to air interface standards in support of CPAS.

4.6 Business Planning. Telecommunications industry representatives expressed strong interest in obtaining estimates from the Government regarding the number of potential CPAS users, since service providers could recover deployment costs through subscriptions that they would receive from authorized CPAS users. The OMNCS should continue its efforts to collect relevant market information to support the development of service provider business plans.

4.7 Education and Outreach Program. The CPAS Subgroup determined that specific information could be incorporated into the existing OMNCS regional training seminars to facilitate education of State and local users. The subgroup also concluded that the effort should focus on educating emergency responders about the user registration and authorization process and encouraging emergency response personnel to preregister their cellular phones with the CPAS administrative office. Therefore, the OMNCS should continue developing an education and outreach program to convey important information to federal, State, and local users.

4.8 Federal Cellular Acquisition Strategy and Nationwide Deployment. The Government is procuring, on a governmentwide basis, wireless communications services, a process that is expected to bring substantial cost savings. States have been invited to join the procurement for the purpose of strengthening the Government's purchasing power.

The subgroup discussed whether and how CPAS should be included in the procurement. Members were particularly concerned that a requirement to provide nationwide CPAS through a procurement might deter potential bidders from participating in the Government's procurement process due to the substantial development effort associated with

the deployment of CPAS. A procurement approach could also lead to a situation where only the winning service provider would deploy CPAS capabilities. As a result, the procurement includes CPAS as an enhancement, rather than a core requirement.

The most desirable approach to obtaining a uniform, nationwide CPAS capability would be for federal, State, and local government and the cellular industry to coordinate on technical, regulatory, and administrative issues and voluntarily deploy CPAS. The CPAS Subgroup suggests that cellular service providers work with standards bodies to achieve technical consensus to support a nationwide CPAS implementation.

4.9 Cellular Resource Allocation. The amount of spectrum and the total number of cellular channels that will be available to authorized CPAS users during a disaster will be determined by individual service providers. Cellular carriers must work with the Federal Government to develop a general policy for allocating cellular radio resources in support of CPAS.

4.10 Post-Deployment Concerns. Following initial CPAS deployment, the CPAS program office should develop a CPAS/GETS interface control document and explore priority access schemes for emerging wireless technologies, such as personal communication services and mobile satellite services. As was previously mentioned, the OMNCS should continue to seek the advice of the NSTAC and should work to facilitate industry and Government coordination. Additionally, if the other requirements that were tabled for this implementation are important to the Government, it should begin studies on the enhancement of CPAS.

4.11 CPAS Implementation Timeline. The timeline on the following page was developed by the CPAS Subgroup; it represents a logistical progression of events in support of nationwide CPAS deployment.

Exhibit 4-1

OMNCS Cellular Priority Access Implementation Timeline

OMNCS MILESTONE	PREIMPLEMENTATION			IMPLEMENTATION		POSTIMPLEMENTATION	
	FY93	FY94	FY95	FY96	FY97	FY98	FY99
• Consult FCC to Determine OMNCS Leadership Role	▲						
• Develop OMNCS Implementation Plan							
- Draft Implementation Plan	▲	▲					
- Incorporate NSTAC Comments			▲▲				
- Finalize Plan			▲▲				
- Obtain COP/COR Concurrence			▲▲				
• Coordinate With Government and Industry		▲					▲
• Develop Service Description			▲▲				
• Demonstrate Capabilities							
- Channel Reservation (McCaw)		▲					
- Dynamic Channel Reservation (Sprint)			▲				
• Establish Program Management Entity							
- Implement NSTAC Recommendations			▲▲				
- Support Federal Wireless Procurement Activities			▲▲				
- Identify Standards Efforts			▲▲				
• Coordinate With Standards Activities			▲	▲			
• Develop Description of GETS Interface			▲	▲			
• Develop Outreach and Education Effort			▲	▲			
• Develop and Implement Regulatory Strategy			▲		▲		
• Present Technical and Administrative Options to FCC			▲	▲			
• Assist User Community in Developing Requirements				▲	▲		
• Priority Assignment and Allocation System							
- Develop Priority Criteria			▲▲				
- Update Current MIS System			▲	▲			
- Establish Carrier Interface Mechanism				▲▲			
- Establish Administrative Office				▲▲			
- Develop Documentation				▲▲			
• Stimulate Competitive Interest				▲	▲		
• Train Cellular Priority Access Users					▲		
• Implement Service in High Risk Areas						▲	
- Identify High Risk Areas			▲▲				
- Conduct Service Trials in Selected Areas				▲	▲		
• Initial Operational Capability					▲▲		
• Acquire Service					▲▲		
• Manage Priority Assignments					▲		
• Track Deployment Activities					▲		
• Coordinate Exercises					▲	▲	
• Extend Service to Other Wireless Technologies					▲	▲	▲

**CELLULAR PRIORITY ACCESS SERVICES SUBGROUP
WORKING DOCUMENT
SECTION FIVE**

SUBGROUP RECOMMENDATIONS

5.0 Subgroup Recommendations to the Federal Government. The following subgroup recommendations are currently being worked by the OMNCS to facilitate nationwide CPAS implementation.

5.1 Summary Recommendation. Coordinate with Federal, State, and local governments, industry groups, and emergency management associations to gain broad consensus and finalize a comprehensive strategy for CPAS implementation. The OMNCS should continue regular meetings with all CPAS stakeholders to address regulatory, administrative, and technical issues.

5.2 Service Implementation Recommendations.

- Implement the functional requirements defined in the *OMNCS Cellular Priority Access Implementation Plan*, less the requirement for priority egress.
- Define CPAS interoperability with GETS.
- Prioritize high-risk service areas for CPAS deployment.
- Conduct service trials and additional simulations to verify CPAS technical approaches.

5.3 Service Administration Recommendations.

- Assign responsibility to implement nationwide CPAS and begin planning now to establish a centralized administrative office.
- Investigate TSP System as a possible oversight mechanism in support of CPAS.
- Develop criteria for assigning priority authorization to CPAS users.
- Determine TSP operational modifications to support CPAS.

5.4 Project Management Recommendations.

- Coordinate with the FCC to determine regulatory alternatives in support of CPAS deployment.
- Monitor the FCC's E-9-1-1 rulemaking proceeding to integrate those activities with the CPAS deployment effort.
- Coordinate with cellular standards bodies to encourage full deployment of IS-41 (Revision C) and early adoption of air interface standards.
- Estimate the number of potential NS/EP users per market to assist service provider business plans.
- Prepare and conduct an education and outreach program for federal, State, and local users.
- Pursue voluntary nationwide CPAS implementation.

ATTACHMENT 1
CPAS SUBGROUP PARTICIPANTS

CPAS SUBGROUP PARTICIPANTS

PRIVATE INDUSTRY

Airtouch
Alcatel
Ameritech
AT&T
BG&E
Bell Atlantic
Bellcore
BellSouth
Cellular One
CTIA
Ericsson
GTE
IVANS
McCaw
MCI
Motorola
Northern Telecom
NYNEX
SBC
Sprint

STATE GOVERNMENT

California
Maryland
Massachusetts
Oregon
South Carolina
Virginia
Washington

STATE ASSOCIATIONS

APCO
NASNA
NASTD
NCCEM
NEMA
NENA

FEDERAL GOVERNMENT

DOC
DOD
FCC
FEMA
FWPC
GSA
NSA
OMNCS
TREAS

ATTACHMENT 2
CELLULAR PRIORITY ACCESS SERVICE DESCRIPTION

Government Functional Requirements	Objectives of the Government Requirements	Enunciators
Standard Terminal: The Priority Scheme Implementation Shall Be Accessed by Any Authorized User on a Standard Terminal and Become Part of the Subscriber Profile That Will Be Recognized Across Wireless and Wireline Systems Nationwide.	Specialized Terminals Restrict Ability To Deploy and Use Service Rapidly Anywhere in the Country. There Should Not Be a Need for Special Telephones	<ul style="list-style-type: none"> • Capability Will Utilize Commercially Available Handsets • Backward Compatibility With AMPS Handsets Is Desired But Not Required • Handsets Will Accept Periodic Updates Indicating User Status in the Queue
Nonpreemptive: The Priority Scheme Implementation Shall Not Affect Calls in Progress.	1934 Communications Act Proscribes Legal Implications for Preemption	<ul style="list-style-type: none"> • No Ruthless Termination of Calls in Progress to Put Up an NS/EP User's Call
Information Independent: The Priority Scheme Shall Facilitate Transmission of Voice and Nonvoice Calls, Such As Imagery and Data.	NS/EP Users Generate Source Information in Many Different Formats. The Use of Cellular Priority Access Should Not Preclude Transmission of Information Generated by Any Source Normally Accommodated by the Cellular Network.	<ul style="list-style-type: none"> • The Cellular Priority Access Capability Should Be Independent of the Source Medium • The Channel That Is Acquired Through Application of Cellular Priority Access Privileges Should Be Able to Support Media Such As Data and Imagery in Addition to Voice
24-Hour Availability: The Capability Should Always Be Available to Authorized Users Without Requiring a Formal Declaration of Emergency or a Requirement to "Turn It On."	Without 24-Hour Availability It Might Be Difficult to Get Cellular Priority Access for NS/EP Users Turned On to Support Emergencies	<ul style="list-style-type: none"> • Cellular Priority Access Should Be Continuously Available to NS/EP Users • No Requirement to Activate the Capability During or in the Aftermath of a Disaster
Feature Invocation: The Feature Shall Be Activated on a Call-by-Call Basis.	Invocation of the Feature on a Call-by-Call Basis Will Encourage NS/EP Users to Appropriately Invoke Priority Access Only During Actual Emergencies	<ul style="list-style-type: none"> • Although Cellular Priority Access Is Continuously Available, Each Call Will Be Selectively Invoked As Required • This Allows the Handset to Be Used As a Regular Phone As Well As a Priority Phone • This Would Allow Users to Select Priority Vs. Non-Priority on a Call-by-Call Basis Based on the Factors Surrounding the Need for the Call As Well As Cost
Hand-Off and Roaming: Once a Cellular Priority Access Call Has Been Established by a Mobile User, All Cell Sites Shall Afford the Call Transparent Operation Across Hand-Off and Service Boundaries.	To Provide Uninterrupted Priority Processing of Calls in Progress and of Calls in Queue Even When the User Changes Locations	<ul style="list-style-type: none"> • Goal Is Seamless Operation Across Cell Boundaries • Must Also Provide Nationwide Roaming by Transporting User Information From One System to Another
Priority Level Assignment: Priority Access Authorization for NS/EP Users Shall Be Performed by a Centralized Administrative Office on a Uniform, Nationwide Basis.	A Nationwide Mechanism Is Required to Ensure Uniform Priority Allocation. This Mechanism Could Be Provided by the TSP System, Which Is Already Operational.	<ul style="list-style-type: none"> • Shall Ultimately Provide Multilevel Priority Access Although As a First Step, Single Level Priority Would Be Acceptable • NS/EP Cellular Priority Calls Will Be Provided Higher Priority Than Commercial Cellular Priority Calls • A Nationwide Mechanism Will Assign Priority Levels to Users • The TSP System Could Undergo Some Modification and Be an Acceptable Nationwide Mechanism for Administration and Authorization

OMNCS Cellular Priority Access Functional Requirements

Government Functional Requirements	Objectives of the Government Requirements	Enunciators
Priority Access: "The Priority Scheme Implementation Shall Provide Priority Handling of Bids for Access to Voice Channels for Outbound Traffic From Authorized Subscribers When All Channels Are Full."	Priority Access Is Required to Enhance the Likelihood of NS/EP Users Gaining Access to Cellular Networks During Periods of Congestion That Occur During Disaster Response Operations	<ul style="list-style-type: none"> System Will Provide Queued Bids for Access With Priority Access to the Next Available Channel
Priority Egress: "The Priority Scheme Implementation Shall Provide Priority Treatment to Bids for Access to Voice Channels for Inbound Traffic From Authorized Subscribers That Originate Traffic Within the Same Cellular System When All Voice Channels Are Full."	NS/EP Users Should Overcome Congestion in the Destination Cellular Network Through Priority Egress	<ul style="list-style-type: none"> System Will Handle Inbound Calls If Originated in Same System Priority Level of Mobile-To-Mobile Calls Will Be Based on the Level of the Originating Subscriber Priority Egress of GETS Priority Calls From the PSN to NS/EP Cellular Subscribers Is Desired
One-Time Registration: "The Priority Scheme Implementation Shall Support One-Time User Registration. Users Shall Not Have To Reregister Their Status As Priority Access Subscribers Upon Entering a New Service Area."	Minimizes Complications in the Priority Registration System and to Promote Uniformity	<ul style="list-style-type: none"> Meant to Refer to Both User Registration and Subscription to Cellular Priority Access Record of Subscription Should Be Available to All Service Providers by Querying the User's Home Location Register User Will Present Service Authorization to Service Provider to Obtain Cellular Priority Service Subscription
User Identification: "The Priority Scheme Implementation Shall Identify and Authenticate Authorized Users With a Priority Field in Their User Profile."	Ensures the Integrity of the System and to Prevent Fraud	<ul style="list-style-type: none"> System Shall Ensure That Only Authorized Subscribers Are Permitted to Invoke Priority Access Any Means Necessary Shall Be Employed, With the Minimum Required Being Electronic Serial Number (ESN) and Mobile-Telephone Identification Number (MIN)
Uniformity: "The Priority Scheme Shall Be Implemented Uniformly Throughout the United States."	Technically and Administratively Uniform Nationwide to Ensure That NS/EP Users Supporting a Disaster May Invoke Priority Access Regardless of Location Nationwide	<ul style="list-style-type: none"> Implementation Shall Be Uniform Nationwide Both Technically and Administratively
Transparency: "The Priority Scheme Be Transparent to the User and Compatible With the Rest of the PSN."	Capability Should Be User Friendly	<ul style="list-style-type: none"> Once Invoked, Cellular Priority Access System Operation Is Transparent to the User
GETS Compatibility: "The Priority Scheme Implementation Shall Be Fully Compatible With the GETS."	GETS Provides Priority Service to NS/EP Users of the Wireline PSN. Compatibility of the Two Systems Will Ensure That Priority Treatment of NS/EP Calls Can Be Affected at the Access, Egress, and Transport Layers of the PSN, to Include the Critical "Last Mile" Covered by Cellular Priority Access.	<ul style="list-style-type: none"> Definition of Compatibility Is Subject to Further Clarification Minimum Service Threshold Is Recognition and Processing of 710 Calls Service Goal Is Transport of Priority Call Data From the Cellular Priority Service Provider to the Local Exchange Carrier and/or Interexchange Carrier for Further GETS PSN Priority Treatment
Feature Compatibility: "Cellular Priority Access Shall Be Compatible With All Other Subscribed Services."	Use of Cellular Priority Access Should Not Impede the Use of Additional Features Generally Subscribed To By NS/EP and Commercial Subscribers	<ul style="list-style-type: none"> Feature Compatibility Must Be As Described in IS-53-A

OMNCS Cellular Priority Access Functional Requirements

ATTACHMENT 3
CELLULAR TECHNOLOGY OVERVIEW

CELLULAR TECHNOLOGY OVERVIEW

This Attachment provides a basic overview of cellular communication technology to give the reader a general understanding of the key network components that would require modification to support nationwide CPAS.

Mobile Switching Center. The MSC is the heart of the cellular system. It serves as the switching unit or central coordinator between the mobile and wireline networks. The MSC is connected to all cell sites within its service area. The MSC communicates with other systems to obtain subscriber information, as well as other MSCs if more than one serves an area. Exhibit A-3-1 illustrates the basic cellular network topology. The MSC is connected to the public switched network (PSN) through the local exchange carrier (LEC) central offices and interexchange carrier (IXC) switches for access to wireline telephone networks. Individual cell sites link to the MSC through a group of voice and data circuits, which are usually four-wire telephone lines or microwave radio links. For each voice channel at a cell site, there must be at least one four-wire voice circuit to connect the MSC to the cell site controller. The MSC also communicates with each cell site controller through two or more full-duplex data links. These links are necessary for processing calls and controlling mobile terminal actions.

Each data link can carry data for several channels from the cell site to the MSC. Typically, T1s (1.544 Mbps) are used for these links. The number of T1s required is determined by the number of radio channels installed at the cell site. Fiber optic cables and microwave systems are the transmission media that connect the MSC with the cell sites. Microwave transmission multiplexes many four-wire telephone circuits, usually the equivalent of one or more T1s, on a single link.

The MSC connects to the wireline PSN through one or more LEC central offices via four-wire telephone lines. The three basic types of interconnection arrangements between cellular carriers and LECs are type 1, type 2A, and type 2B.

Type 1 interconnections provide trunk connections between a LEC end office and the MSC. These allow the cellular service provider to establish connections to other LEC end offices. Type 2A interconnections are used between the MSC and an access tandem switch to link to a number of LEC end offices and IXC networks. Type 2B provides a direct connection to a designated end office that serves a specific exchange. This option can be used in conjunction with the type 2A interconnection on a high-usage alternate routing basis to serve high-volume traffic between the MSC and the LEC end office.